C MITIGATION MONITORING PROGRAM

As the Lead Agency under the CEQA, the CSLC is required to adopt a program for reporting or monitoring the implementation of mitigation measures for this Project, if it is approved, to ensure that the mitigation measures incorporated into the Project by the Applicant are implemented as defined in this MND. This Lead Agency responsibility originates in Public Resources Code section 21081.6(a) (Findings), and the State CEQA Guidelines sections 15091(d) (Findings) and 15097 (Mitigation Monitoring or Reporting).

C-1.1 MONITORING AUTHORITY

The purpose of a Mitigation Monitoring Program (MMP) is to ensure that measures adopted to mitigate or avoid significant impacts are implemented. A MMP can be a working guide to facilitate not only the implementation of mitigation measures by the Project proponent, but also the monitoring, compliance and reporting activities of the CSLC and any monitors it may designate.

The CSLC may delegate duties and responsibilities for monitoring to other environmental monitors or consultants as deemed necessary, and some monitoring responsibilities may be assumed by responsible agencies, such as affected jurisdictions and cities, and the California Department of Fish and Game (CDFG). The number of construction monitors assigned to the Project will depend on the number of concurrent construction activities and locations. The CSLC or its designee(s), however, will ensure that each person delegated any duties or responsibilities is qualified to monitor compliance.

Any mitigation measure study or plan that requires the approval of the CSLC must allow at least 60 days for adequate review time. When a mitigation measure requires that a mitigation program be developed during the design phase of the project, the Applicant must submit the final program to CSLC for review and approval for at least 60 days before construction begins. Other agencies and jurisdictions may require additional review time. It is the responsibility of the environmental monitor assigned to each spread to ensure that appropriate agency reviews and approvals are obtained.

The CSLC or its designee will also ensure that any deviation from the procedures identified under the monitoring program is approved by the CSLC. Any deviation and its correction shall be reported immediately to the CSLC or its designee by the environmental monitor assigned to the construction spread.

C-1.2 ENFORCEMENT RESPONSIBILITY

The CSLC is responsible for enforcing the procedures adopted for monitoring through the environmental monitor assigned to each construction spread. Any assigned environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CSLC or its designee.

C-1.3 MITIGATION COMPLIANCE RESPONSIBILITY

The Applicant is responsible for successfully implementing all the mitigation measures in the MMP, and is responsible for assuring that these requirements are met by all of its construction contractors and field personnel. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as avoiding a specific impact entirely. Other mitigation measures include detailed success criteria. Additional mitigation success thresholds will be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

C-1.4 GENERAL MONITORING PROCEDURES

Environmental Monitors. Many of the monitoring procedures will be conducted during the construction phase of the Project. The CSLC and the environmental monitor(s) are responsible for integrating the mitigation monitoring procedures into the construction process in coordination with the Applicant. To oversee the monitoring procedures and to ensure success, the environmental monitor assigned to each construction spread must be on site during that portion of construction that has the potential to create a significant environmental impact or other impact for which mitigation is required. The environmental monitor is responsible for ensuring that all procedures specified in the monitoring program are followed.

Construction Personnel. A key feature contributing to the success of mitigation monitoring will be obtaining the full cooperation of construction personnel and supervisors. Many of the mitigation measures require action on the part of the construction supervisors or crews for successful implementation. To ensure success, the following actions, detailed in specific mitigation measures, will be taken:

- Procedures to be followed by construction companies hired to do the work will be written into contracts between the Applicant and any construction contractors. Procedures to be followed by construction crews will be written into a separate

document that all construction personnel will be asked to sign, denoting agreement.

- One or more pre-construction meetings will be held to inform all and train construction personnel about the requirements of the monitoring program.
- A written summary of mitigation monitoring procedures will be provided to construction supervisors for all mitigation measures requiring their attention.

General Reporting Procedures. Site visits and specified monitoring procedures performed by other individuals will be reported to the environmental monitor assigned to the relevant construction spread. A monitoring record form will be submitted to the environmental monitor by the individual conducting the visit or procedure so that details of the visit can be recorded and progress tracked by the environmental monitor. A checklist will be developed and maintained by the environmental monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The environmental monitor will note any problems that may occur and take appropriate action to rectify the problems.

Public Access to Records. The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CSLC or its designee on request.

C-1.5 MITIGATION MONITORING TABLE

The following sections present the mitigation monitoring tables for each environmental discipline. Each table lists the following information, by column:

- Impact;
- Mitigation Measure;
- Location (where the impact occurs and the mitigation measure should be applied);
- Monitoring/reporting action (the action to be taken by the monitor or Lead Agency);
- Effectiveness criteria (how the agency can know if the measure is effective);
- Responsible agency; and
- Timing (before, during, or after construction; during operation, etc.).

Table C-1. Mitigation Monitoring Program – Agricultural Resources

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
AGR–a, c–1: Construction could result in conversion of Prime Farmland to a non-agricultural use.	AGR–a, c–1: The Applicant shall monitor all areas disturbed along the construction right-of-way to identify any area that may require additional restoration, noxious weed treatment, or erosion control. The Applicant shall work with landowners to ensure fair settlement of any claims of crop loss, drainage problems, or property damage related to the pipeline and would repair and correct any areas identified as needing additional work in consultation with the landowner. The Applicant's contractor shall obtain landowner sign-off verifying all restoration has been completed to the satisfaction of the landowner prior to demobilizing from the right-of-way.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of converting Prime Farmland to a non-agricultural use. PG&E will submit copies of the landowner signoff to CSLC	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to, during, and after construction
AGR–a, c–2: Operation of the proposed Project could result in the conversion of Prime Farmland.	AGR–a, c–2: The Applicant shall conduct a risk analysis (including measuring the depth of the topsoil over the pipe) every seven years until there is only three feet of topsoil remaining over the pipeline. At that time, given the current Federal, State, and local regulations and local land uses, the Applicant shall consult with the California State Lands Commission (CSLC) to determine what resolution would be required. Possible solutions could include, but are not limited to; a. addition of soil to maintain three feet of cover; or b. lowering the pipe; or c. placing a protective barrier over the top of the pipeline.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of converting Prime Farmland to non-agricultural use.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	After construction

Table C-2. Mitigation Monitoring Program – Air Quality

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
AIR-a, b-1: Construction activities would generate emissions and fugitive dust.	AIR-a, b-1: The construction contractor shall ensure that the following Bay Area Air Quality Management District measures are implemented during construction: (a) Water all construction areas at least twice daily.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce emissions from exhaust.	Consistent with requirements stipulated by resource agencies. Confirmation by	CSLC	Prior to and during construction

Table C-2. Mitigation Monitoring Program – Air Quality

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	(b) Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard space. (c) Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc). (d) Replant vegetation in disturbed areas as quickly as possible. The construction contractor shall also ensure that the following San Joaquin Valley Air Pollution Control District measures are implemented during construction: (e) All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover. (f) All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. (g) When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. (h) Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.			Environmental Monitor.		

Table C-2. Mitigation Monitoring Program – Air Quality

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
AIR–e–1: Purging operations would create odors.	AIR-e-1: The Applicant shall notify the San Joaquin Valley Air Pollution Control District and Bay Area Air Quality Management District 48 hours prior to the beginning of the purging procedure.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce outdoor odors.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	During construction

Table C-3. Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
BIO-a, b-1: Construction activities could adversely impact special status plant species and freshwater emergent marsh habitat.	BIO-a, b-1: The Applicant shall conduct Worker Environmental Awareness Program (WEAP) training for construction crews (primarily crew and construction foreman) before construction activities begin. The WEAP shall include a brief review of the special status species and other sensitive resources that could occur in the proposed Project site (including their life history and habitat requirements and what portions of the proposed Project area they may be found in) and their legal status and protection. The program shall also cover all mitigation measures, environmental permits and proposed Project plans, such as the Stormwater Pollution Prevention Plan (SWPPP), best management practices (BMPs), erosion control and sediment plan, and any other required plans. During WEAP training, construction personnel shall be informed of the importance of avoiding ground-disturbing activities outside of the designated work area. The designated biological monitor shall be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. WEAP training sessions shall be conducted as needed for new personnel brought onto the job during the construction period.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of adversely impacting special status plant species and freshwater emergent marsh habitat.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to and during construction

Table C-3. Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	BIO-a, b-2: Prior to any construction activities on the site, a protective fence shall be installed a minimum of one foot (or greater, if feasible) from the edge of all special status plant populations to be avoided in the immediate vicinity of the proposed construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all special status plant populations have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities have been completed.	Palm Tract, Bacon Island	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of adversely impacting special status plant species and freshwater emergent marsh habitat.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to and during construction
BIO-c-1: Construction activities could adversely impact waters of the U.S.	BIO-c-1: Prior to any construction activities on the site, a protective fence shall be installed a minimum of one foot (or greater, if feasible) from the edge of all wetland habitat to be avoided in the immediate vicinity of the proposed construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all wetland features have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities have been completed.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of adversely impacting waters of U.S.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to and during construction
	BIO-c-2: The Applicant shall provide a copy of the "Contingency Plan, Inadvertent Release Prevention and Response Plan for Non-Hazardous Drilling Fluid" to the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Central Valley Regional Water Quality Control Board, and the California Department of Fish and Game for their review and approval. This may occur during the permitting process.					

Table C-3. Mitigation Monitoring Program – Biological Resources

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
BIO-d-1: Construction activities could interfere with the movement of native resident wildlife species.	BIO-d-1: The Applicant shall provide all excavated, steep-walled holes and trenches in excess of 3 feet in depth with one or more escape ramps constructed of earthen fill or a wood/metal plank. If wildlife proof barricade fencing is available, it should also be used where appropriate. Escape ramps shall be less than a 45° angle. Trenches and pits shall be inspected for entrapped wildlife each working day before construction activities resume. Before such pits and trenches are filled, they shall be thoroughly inspected for entrapped animals. If any wildlife species are discovered, they should be allowed to escape voluntarily, without harassment, before construction activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded. All construction pipes, culverts, or similar structures that are stored at a construction site overnight shall be thoroughly inspected for trapped animals before the pipe is buried, capped, or otherwise used or moved. Pipes laid in trenches overnight shall be capped. If an animal is discovered inside a pipe, that section of pipe shall not be capped or buried until the animal has escaped. The Applicant shall not use plastic mono-filament netting (erosion control matting) or similar material because amphibians and snakes may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of adversely impacting waters of U.S.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	During construction
BIO-e, f-1: Construction and operation of the valve lot on Palm Tract would result in the loss of land protected under a conservation easement.	BIO-e, f-1: The Applicant shall provide a monetary compensation to the CDFG for disturbance on Palm Tract associated with the proposed Project at a minimum ratio of 1:1, or as determined in consultation with CDFG.	Entire alignment	PG&E will provide documentation from CDFG that states compensation arrangements.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to construction

Table C-4. Mitigation Monitoring Program – Cultural Resources

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
CUL-b-1: Construction activities could adversely affect the significance of an archaeological resource.	CUL-b-1: Prior to Project construction the following shall occur: • Temporary exclusionary fencing, indicating a "Sensitive Environment Zone," shall be constructed along the south eastern edge of the McDonald Island temporary use area adjacent to CA-SJO-189. • A qualified archaeologist familiar with CA-SJO-189 and the soil types surrounding the site shall be retained to assist with the fencing and ensure it is outside of the boundaries of CA-SJO-189.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of adversely affecting the significance of archaeological resources.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to construction
CUL-c-1: Construction could adversely impact paleontological resources.	CUL-c-1: Prior to Project construction, the Applicant shall retain a qualified paleontologist to design and implement a monitoring and mitigation program for the portions of the Project likely to impact paleontological resources (HDD techniques, and trenching on McDonald and Bacon Islands). The program shall include construction monitoring; emergency discovery procedures; sampling and data recovery, if needed; museum storage coordination for any specimen and data recovered; and preconstruction coordination and reporting.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of adversely impacting paleontological resources.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to and during construction

Table C-4. Mitigation Monitoring Program – Cultural Resources

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
CUL-d-1: Construction could disturb human remains.	CUL-d-1: If human remains are discovered, there shall be no further excavation or disturbance of the discovery site or within 50 feet until the Applicant has complied with the provisions of the State CEQA Guidelines section 15064.5(e). In general, these provisions require that the County Coroner shall be notified immediately. If the remains are found to be Native American, the County Coroner shall notify the Native American Heritage Commission within 24 hours. The most likely descendant of the deceased Native American shall be notified by the County and given the chance to make recommendations for the remains. If the County is unable to identify the most likely descendent, or if no recommendations are made within 24 hours, remains may be re-interned with appropriate dignity elsewhere on the property in a location not subject to further subsurface disturbance. If recommendations are made and not accepted, the Native American Heritage Commission will mediate the problem.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of disturbing human remains.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	During construction

Table C-5. Mitigation Monitoring Program – Geology and Soils

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
GEO-a (i, ii)-1: The proposed pipeline could be damaged by strong seismic ground shaking.	GEO-a (i, ii)-1: In accordance with the recommendation in the Preliminary Geotechnical Services Report *Pacific Gas & Electric Pipeline 57C Revised Route, San Joaquin County, California* (Kleinfelder, Inc. 2005), the Applicant shall design the pipeline to withstand a maximum considered earthquake of 6.7. The Applicant shall prepare a seismic analysis subject to review and approval by California State Lands Commission 60 days prior to the start of construction. The analysis shall substantiate how the pipeline has been modified to withstand a 6.7 seismic event.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of pipeline damage by seismic ground shaking.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to construction

Table C-5. Mitigation Monitoring Program – Geology and Soils

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	GEO-a (i, ii)-2: In order to ensure the safety of excavations, OSHA-approved shoring shall be used at all times when shoring is required. Within construction activities on Palm Tract (Seismic Zone 4) potential impacts of ground shaking shall be assessed to determine the adequacy of OSHA-approved shoring. Any necessary enhancements to OSHA-approved shoring on Palm Tract shall be incorporated into the final trench design.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of pipeline damage by seismic ground shaking.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	During construction
	GEO-a (i, ii)-3: The Applicant shall design the proposed Project for seismic resistance, meeting the requirements of current seismological engineering standards such as the "Guidelines for the Design of Buried Steel Pipe" by American Lifeline Alliance and the "Guidelines for the Seismic Design of Oil and Gas Pipeline Systems" by American Society of Civil Engineers. All engineered structures, including pipeline alignment drawings, profile drawings, buildings and other structures, and other appurtenances and associated facilities, shall be designed, signed, and stamped by California registered professionals certified to perform such activities in their jurisdiction.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of pipeline damage by seismic ground shaking.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to construction

Table C-5. Mitigation Monitoring Program – Geology and Soils

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
GEO-c-1: The Project would be located on an unstable soil unit, disruption of which could cause levee failure.	GEO-c-1: Project design shall incorporate all recommendations for HDD activities as recommended in the *Preliminary Geotechnical Services Report Pacific Gas & Electric Pipeline 57C Revised Route, San Joaquin County, California*, dated June 2005, prepared by Kleinfelder, Inc, as outlined below. Mitigation of Adverse Drilling Conditions: • Surface casing shall be installed at the bore entry side to control the drill path and reduce loss of circulation in the upper soils. • The HDD drilling contractor shall prepare a drilling program specifically designed for the site soil conditions. This program shall include any additives the subcontractor may need to employ, including additives to increase gel and filter cake strength, inhibit swelling, and reduce stickiness. Possible loss of circulation materials and grouting materials shall also be included in the plan. • The entry point shall consist of a steel pipe driven at approximately a 10 to 15 degree angle to a competent soil strata or to at least a depth of 25 feet (equates to a length of approximately 100 feet). Recommended Drilling Depth: • The entrance and exit points of the HDD shall be stationed at least 400 feet from the toe of the levee. • The depth of the bore beneath the toe of the levee and the bottom of the waterway shall be at least 60 feet. • A soil buttress will not be needed at either the entrance or exit point, assuming that the HDD will occur during the summer or fall months when the adjacent river elevation is at its low point.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of levee failure.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to and during construction

Table C-5. Mitigation Monitoring Program – Geology and Soils

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	Inspection and Monitoring: • Geotechnical engineering personnel shall be on site during the HDD activities to make physical observations of the levee and the toe of the levee in order to evaluate if any movement is occurring. • The geotechnical engineering personnel shall have the authority to stop the boring operations if it appears as though damage is occurring to the levee. • A pressure while drilling tool shall be utilized during the HDD. • The drilling contractor shall develop a Drilling Fluid Program as part of the HDD Bore Plan, which shall take into account anticipated soil conditions, fluid selection, drill bit and reamer selection, and volume calculations. • An Emergency Response Plan, shall be provided that would include provisions for having heavy equipment and material available, such as front-end loaders, soil and riprap stockpiles, geotextile fabric, etc., that can be used to buttress the levee in case movement is observed.					

Table C-5. Mitigation Monitoring Program – Geology and Soils

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	Drilling Fluid Selection: • A Drilling Fluid Program Base Fluid shall be designed for site-specific soil conditions. The base fluid may consist of either a bentonite or polymer base and water with additives to achieve specific fluid properties; however, additives that are considered toxic to wildlife will not be allowed. • In reactive soils the use of partially hydrolyzed polyacrylamide polymers to inhibit swelling and wetting agents to reduce stickiness may prove beneficial. Additives may be needed to treat make-up water containing excess amounts of calcium or chlorine. Salt (chloride) is detrimental to base fluid performance and shall not be present in make-up water. • The drilling contractor shall submit a base fluid design with a list of additives, loss of circulation materials, and grouting materials that may be used on the Project and material safety data sheets for approval at least 60 days prior to mobilization. • The drilling fluid program, including the base fluid design, manufacturer's specifications and material safety data sheets should be submitted to the California State Lands Commission, the Reclamation Board, the Central Valley Regional Water Quality Control Board, and Department of Fish and Game, at least 60 days prior to mobilizing equipment to the site. • For preliminary planning purposes, a bentonite drilling fluid composed of Bore Gel (or equivalent) mixed at an approximate proportion of five 50-pound bags per 400 gallons of clean water is recommended as a consideration. The procedures described in ASTM C-939 (flow cone method) are recommended to be utilized to monitor drilling fluid consistency.					

Table C-5. Mitigation Monitoring Program – Geology and Soils

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
	Drill Bit and Reamer Selection: • Drill bits and reamers shall be based on anticipated subsurface conditions and past experience. • The use of mud motors shall be considered in cemented soil with Standard Penetration Test blow counts exceeding 60 blows per foot. Drill Pad Support Line: • Some ground improvement may be needed to provide support for the HDD drilling equipment. This may include a geotextile placed over compacted soil and covered with approximately 12 inches of aggregate base or large mats that can be removed after the hole is completed.					
GEO-c-2: Subsidence in the Project area could adversely affect the structural integrity of the proposed Project.	GEO-c-2: The Applicant shall conduct a site-specific subsidence study and submit a report certified by a California registered engineering geologist or geotechnical engineer for the CSLC staff review and approval prior to approval of construction by CSLC. In addition, the applicant shall verify the pipeline integrity due to the subsidence potential through the pipeline structural analysis. An operational mitigation measure to monitor the subsidence over the life of the pipeline shall be developed and submitted as part of the subsidence study for CSLC staff review and approval. Further, the geotechnical report shall provide an estimate of the difference, if any, between the soils underlying the pipeline and those surrounding the pipeline.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of subsistence adversely affecting the structural integrity of the proposed Project.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to and during construction

Table C-6. Mitigation Monitoring Program – Hazards and Hazardous Materials

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
HAZ-d-1: Construction of the proposed Project could expose an unknown hazard that could create a significant hazard to the public or environment.	HAZ-d-1: During Project construction, the contractor shall monitor exposed soil for signs of contamination. If evidence of soil contamination is encountered during construction, work shall cease and an investigation will be performed by a qualified and approved environmental consultant to confirm contamination and determine its extent. The investigation will include sampling for laboratory analysis. This will determine what measures are necessary to determine how workers will be protected and how hazardous materials shall be handled and disposed of. Removal will be completed with an approved remediation plan by workers trained though the OSHA recommended 40-hour safety program (29CFR1910.120) shall remove hazardous materials. A health and safety plan will also be prepared by an approved and qualified industrial hygienist to protect the public and all workers in the construction area. As part of this process, the Applicant shall ensure that any necessary investigation and/or remediation activities conducted in the Project site are coordinated with the County's Fire Departments, the Contra Costa County Department of Health Services, Division of Environmental Health, and the San Joaquin County Department of Environmental Health, and, if needed, other appropriate State agencies.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of exposure to unknown hazards that could create a significant hazard to the public or environment.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	During construction

Table C-6. Mitigation Monitoring Program – Hazards and Hazardous Materials

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
HAZ-h-1: Construction activities could cause a peat fire.	HAZ-2: The Applicant shall develop and implement a peat fire prevention plan in addition to the fire protection plan required by the U.S. Department of Transportation, Office of Pipeline Safety. The plan shall be developed in consultation with the State Fire Marshall or other responsible fire-fighting agencies. The plan shall include specific measures to prevent ignition and spread of a peat fire, including, but not limited to: a "no smoking "policy in all work areas; required use of fire retardant blankets or other suitable barriers in areas where pipe welding, grinding, or cutting would occur; required presence of appropriate fire suppression equipment available at all time during activities that may result in ignition of peat soils; requirement of a training plan to all personnel prior to construction activities; and a two-hour fire watch following pipe welding, grinding and cutting activities.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of peat fires.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to and during construction

Table C-7. Mitigation Monitoring Program – Hydrology and Water Quality

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
HYD-i-1: Levee failure could damage the proposed Project.	HYD-i-1: The Applicant shall design the pipeline such that the pipe depth will be at least 70 feet deep for a distance equal to 40 percent of the scour hole length, measured from the center of the levee. After this distance, the pipeline can begin a gradual ascent toward the surface. However, the pipe shall not reach the surface within a distance less than 2,100 feet from the center of the levee for the Empire Cut crossing and 1,900 feet from the center of the levee for the Old River Crossing.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the possibility of levee failure damaging the proposed Project.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	Prior to construction

Table C-8. Mitigation Monitoring Program – Noise

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
NOI-a-1: Construction activities would create noise in excess of standards.	NOI-a-1: During HDD and hydrostatic testing, the following construction noise reduction measures shall be implemented: • Use heavy-duty mufflers for stationary equipment and barriers around particularly noisy areas of the site or around the entire site; • Use shields, impervious fences, or other physical sound barriers to inhibit transmission of noise to sensitive receptors; • Minimize backing movements of equipment where possible; • Prohibit unnecessary idling of internal combustion engines; and • Designate a noise disturbance coordinator who shall be responsible for responding to complaints about noise during construction. The telephone number of the noise disturbance coordinator shall be conspicuously posted at the construction site.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce noise in excess of standards.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	During construction

Table C-9. Mitigation Monitoring Program – Environmental Justice

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
EJ-1: Operation of the proposed Project could disproportionately impact low income or minority populations	EJ-1: The Applicant shall adopt a High Consequence Area type integrity assessment for the entire pipeline route.	Entire alignment	PG&E will be responsible for implementing all mitigation measures to reduce the environmental justice impact.	Consistent with requirements stipulated by resource agencies. Confirmation by Environmental Monitor.	CSLC	During operation